PINTEREST ATTRACTION BETWEEN USERS AND SPAMMERS

AHMED A. RADWAN[1], HARSHA V. MADHYASTHA[2], FATMA OMARA[3], TAREK MAHMOUD[4]

& ENAS ELGELDAWI[5]

[1,4,5]Department of Computer Science, Faculty of Science, Minia University, Egypt

[2]Department of Computer Science and Engineering, University of California, Riverside, USA

[3]Department of Computer Science, Faculty of Computers and Information, Cairo University, Egypt

ABSTRACT

Over the last few years, Online Social Networks (OSN) have become one major way for millions of users to interact and communicate with each other. OSNs had a deep impact in changing the way people practice their social life partially and replacing some conventional ways people use to keep in touch with family and friends. In 2010 a new member has joined the OSN World, this new member is Pinterest. Pinterest has experienced exponential growth since its birth date. Among all Social Networks, the fastest growing one in 2012 was by far Pinterest. As spammers usually go where users go, it is not surprising that Pinterest is increasingly attracting both users and spammers. Spam on Pinterest has been the hot topic this past year among users, reviewers, and reporters. Although the spam problem in OSNs has been studied before for many networks such as Facebook and Twitter, we mark this paper to be the first review to spot the problem of spam and fake accounts in Pinterest. In this paper, we take a closer look on spammers' activity on Pinterest, trying to make a good understanding of how they operate and how they target end users.

KEYWORDS: Online Social Networks, Spammers, Fake Accounts

INTRODUCTION

Since the beginning of Online Social Networks in 1997 they have played and still playing a main role in the way people pursue they social life. Almost everyone's social life has become associated with social networks, building your own community and keeping in contact with friends has not been easier and enjoyable. Some OSNs did not survive for long, while others manage to stand still till now. But with the rapid growth of any OSN, and as they rise in popularity, many problems also arise, like online impersonation, fake accounts, and spam. Pinterest, the new member of the OSN family, has become a star in almost no time. As Pinterest gains that much publicity among users, spammers have found their way to it too. And hence, many articles as Orsini (2012) [a, b, c, d], Doshi (2012), Collins (2012), McHugh (2012), Protalinski(2012), Perez (2012) have shed the light on the spam problem in Pinterest. In a blog post in April 13 2012, Pinterest acknowledged its spam issues, explaining its ever-improving Spam-fighting technology and overall effort to make things better Greenfield (2012). At mid and late 2012 they made a noticeable effort regarding the spam problem by banning several spamming accounts. However, spammers still find new ways to hide, every passing day, and here we are trying to dig deeper in such a problem, and review most of the things written about the spam problem in Pinterest. In the following section we answer the question "What is Pinterest?". Section 5 and 6, lists some important dates and facts about Pinterest. We explain the spam problem in Pinterest in section 7, and finally our conclusion and remarks are presented in section 8.

WHAT IS PINTERESR?

According to the definition in the Pinterest.com page, "Pinterest is a tool for collecting and organizing things you love". Pinterest is an OSN that allows users to "Pin" materials they find "Interesting" onto virtual pinboards and share them with others. Following are the basic terms we will be using throughout the paper and you should be aware of when using Pinterest:

Pin: A Pin could be an image or a video, you add a Pin either by uploading it right from your computer, or by using the "Pin it" bookmarking button which you install from the Pinterest website and got it added to your browser's bookmark toolbar, so you can instantly pin any image or video you come across as you are browsing the Internet. You also have the option of setting a link to your Pin. A Pin can be repined by other users, and all repined pins should link back to the original source. When viewing someone's pin, you have three options, to like the pin, comment on the pin, or repin the pin to one of your own boards.

Board: A Board is where you group your pins together and organize them by topic, giving each board a meaningful name that describes the nature of the pins it contains.

Followers: They are the users who follow you. A user can follow you either by following all your boards, or just the ones they are interested in.

Following: They are the users who you follow.

Collaboration Board: Pinterest does allow collaboration in boards. Such that, a group of users share the same board and each one of them can add pins to that board. But the board owner has to enable contributors, a function only the board owner can perform. The prerequisite is that you, as a board owner, must follow one or more boards of others you would like to add as contributors before adding them. The collaborative board appears in all of the contributors profiles as if it is one of their own boards.

We summarize the growth happened in Pinterest since it has been born in the one look graph indicated by Figure 1.
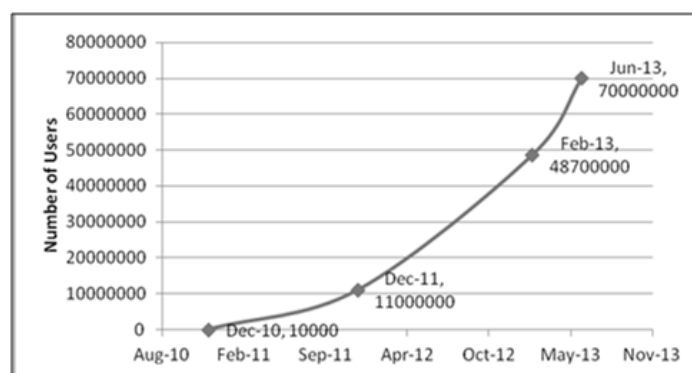

Figure 1: Pinterest Growth Timeline

PINTEREST TIMELINE

Table 1

Dec 9th 2009	The development of Pinterest started by co-founders Ben Silbermann.
Mar 10th 2010	The first prototype of Pinterest was launched as a closed beta and was open only to people with invitation and a small group of colleagues and family members.

Table 1: Contd.,	
Dec 1st 2010	Pinterest had gained 10,000 users nine months after the site was launched and proceeding to operate in invitation-only open beta.
Mar 2011	Pinterest launched its first iPhone app which brought in a more than expected number of downloads
Aug 16th 2011	Time magazine listed Pinterest in its "50 Best Websites of 2011" article.
Dec 5th 2011	Pinterest became one of the top 10 largest social network services, according to Hitwise data, with 11 million total visits per week.
Dec 2011	Company was named the best new startup of 2011 by TechCrunch.
Aug 10th 2012	Pinterest no longer required a request or an invitation for people to join the site.
Aug 14th 2012	Pinterest app for Androids and iPad was launched, along with an updated for its iPhone app based on users' feedback to include a 2 column layout. The Android app was customer designed for Android phones & tablets of all cost, speed and size while the iPad app is described as the "best Pinterest experience yet"
Jan 1st 2012	comScore reported the site had 11.7 million unique users, making it the fastest site in history to break through the 10 million unique visitor mark.
Oct 5th 2012	Pinterest introduced a new update, making images on the app larger and making it easier to pin photos from external sites.
Oct 17th 2012	Pinterest announced a new feature that would allow users to report others for negative and offensive activity or block other users if they do not want to view their content. Pinterest said they want to keep their community "positive and respectful"
Oct 2012	Pinterest launched business accounts allowing businesses to either convert their existing personal accounts into business accounts, or start from scratch.
Feb 2013	Reuters and ComScore stated that Pinterest had 48.7 million users.

FACTS ABOUT PINTEREST

Pinterest is considered the fastest growing Social Network in history, as a report from ComScore indicated in Perez (2012)[a] and Constine (2012), in this report Pinterest growth was calculated using both unique visitors and clicks from search engines, and it was found to be the fastest growing network in both categories, showing +4377% growth between May 2011 and May 2012, compared to a growth rate for Twitter by 58%, LinkedIn 67%, Tumblr 168%, and Facebook 4% during the same period of time, as depicted by Figure 2 and Figure 3 from ComScore. Moreover, Pinterest users were found to spend more time, buy more items and conduct more transactions online than other social media buyers. A late 2012 survey by the Pew Research Center's Internet & American Life Project (2013) shows that the percentage of internet users using Pinterest is nearly the same as for those using Twitter. Pinterest has attracted 15% of internet users to its virtual scrapbooking [White (2013)]. Whites, young people, the well-educated, those with higher income, and women are particularly likely to use the site. Pinterest is equally popular among those 18-29 and 30-49 (19%). Women are about five times as likely to be on the site as men.

Here are some important numbers about Pinterest:

15% of social media users are on Pinterest [White (2013)].

25% of female social media users are on Pinterest [Perez (2012)].

80% of Pinterest users are female [Honigman (2012)].

50% of Pinterest users have children [Perez (2012)].

28% of Pinterest users are well off (household income of over 100,000 annually) [Honigman (2012)].
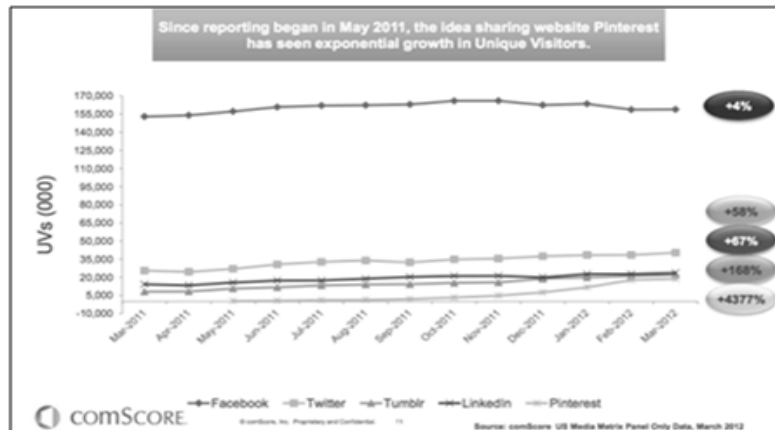
**Figure 2: Comscore Graph Indicating Pinterest Growth in 2012 versus
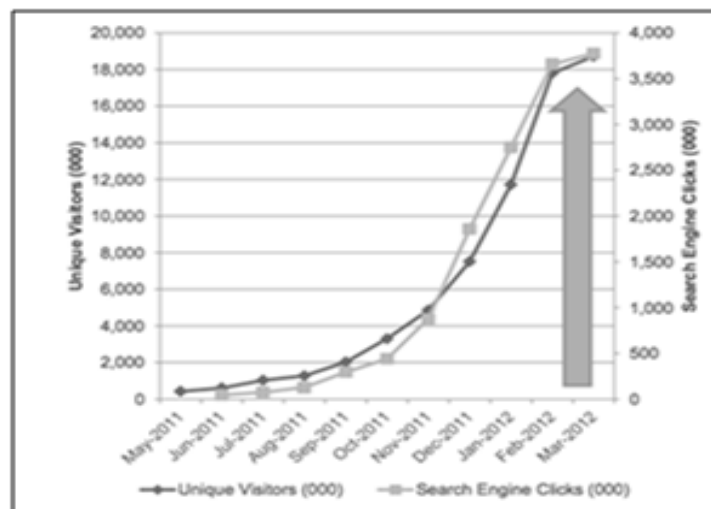Facebook, Twitter, Tumblr and LinkedIn**

**Figure 3: Pinterest's Growth was Calculated Using Both Unique Visitors and Clicks from
Search Engine, and it was found to be the Fastest Growing Network in Both Categories**

PINTEREST AND SPAM

All of the above statistics about Pinterest are impressive and strive toward a clear fact that is Pinterest drive more traffic to retailers, business sites… etc. than any other social network. This fact made Pinterest an amazing target for spammers. We categorize the spam reported by users and security researchers into three kinds:

Collaboration Option Spam

The first noticeable kind of spam in Pinterest is how to misuse the collaborate option to gain free publicity or post unwanted content in the collaborator page. With this option you can add anyone you follow to a board as a moderator. That's regardless of whether the second user follows you back or not. When you're added as a board collaborator, the shared board pops up on your profile. Users need neither permission nor a friend request confirmation to add a collaborator. According to Orsini (2012)[b] while most pinners use this feature responsibly, the possibilities for abuse are endless. If you're trying to promote a board for your small business, for example, why not make an inactive celebrity or a big brand a collaborator? Then, your board will appear to anyone who checks out that celebrity profile.

Figure 4: Starbucks Coffee Pinterest Account   Figure 5: Barack Obama Pinterest Account

On Pinterest's Help page, the company notes: "Users who you add as contributors will receive an email notification. They can choose to remove themselves at any time." However, inactive users might not notice they were added. Take Starbucks Account Figure 4 as an example, the brand's account has been inactive for three weeks, and hence anyone who wants can add Starbucks as a board collaborator, regardless of whether the board is topical or not. So Chicago Botanic Garden used that publicity by adding Starbucks to its Great Garden Recipes board, without any apparent link between vegetables and coffee. The same thing happened with the president Barak Obama's profile Figure 5 but this time it was unintentionally, due to Orsini (2012)[b], when he suddenly appeared to have a new board labeled #BroPin, which is a board moderated by social media strategist Mike Street. Street confirmed that he had invited the President to contribute to his board, but had no idea it would show up on the President's profile.

This is not just it, but another loophole shows that collaboration hijacking can go both ways. A small stationary company, Bella Figure Letterpress, wanted to hold a contest on Pinterest for its customers by inviting more than 180 Pinterest users to pin to its "Do Good in March" collaboration board. Instead, it's been inundated with spam and was helpless to do anything about it.

Survey Spam

Survey scams seem to be the most popular, they usually promise items such as gift cards or free electronics, as long as you fill out multiple marketing surveys. Symantec tried to investigate the anatomy of the scam all the way to the code in Orsini (2012)[c], they explained that the scam process is an algorithm of 3 steps:

- If an unsuspecting Pinterest user clicks on the link for one of the scam images, he or she is taken to an external website. The website states that in order to take advantage of the offer, they must re-pin the offer onto their own Pinterest board. This helps propagate the scam, as it now gains further credibility by being posted by a trusted source. Some of the trusted source's followers subsequently fall for the same scam, then their followers as well, and so on.

- After re-pinning the scam, the user is asked to click the second link on the landing page. This link redirects the user to a survey scam page. Most scam pages ask the user to fill in surveys, sign-up for subscription services, reveal personal information, or even install unwanted executables. Some of the Pinterest scams led to a cost-per-action (CPA) based network. For each successful conversion the scammer is expected to make between one and 64 US dollars. So, a scammer might be earning a few hundred dollars each day from these scams.

- The final step includes code to dynamically choose the landing page, the marketing message, and the image to be used in the Pinterest pin.

Money Targeting Spam

Although filling out surveys not only jeopardizes usere's personal information but it also ends up earning the spammer some amount of money, but it still a small amount of money. The third type of spam is the real catch for spammers because it specifically targets user's money. Here the spammers run thousands of automated Pinterest profiles, make these accounts follow each other and repin the pins of each other to make certain pins appear in the popular pins page of Pinterest in order to attract real users. These pins direct the user to an affiliate link to buy some product.

At Black Hat World, a forum where spammers share tips and tricks, user "gimme4freehas" is spamming Pinterest and is selling a botting and scripting program to help others to quickly and easily generate thousands of bot profiles to spam the site automatically. The program generates an army of bots and connects it to the spammer's Amazon Affiliate account, where he'll automatically earn money every time a user from Pinterest clicks the pin and makes the Amazon purchase. He wrote in his personal page at the Black Hat World "In January I thought to give them a try by making up a couple of bots, after the success rates that I was seeing I decided to create a whole package of bots which I have been using non-stop since the day with just a couple of account bans which were caused by excessive spamming & also they even lasted a few days before being shut down!" Orsini (2012)[d].

An interview made by the Daily Dot with another Pinterest spammer has revealed interesting details of how spammers work. The 24 years old spammer, Steve – as he claimed his Last Name – says that his only source of income is from the earnings he makes online. We quote that from the interview "Well, when I started I did a test run to see what kind of traffic I could get. I manually posted pins for 4 hours straight and let them sit for a day. Next day I made something like $20 I think. So I decided to automate it because I could see the huge potential this had.

As the days came my earnings increased and increased and increased. First week of doing this I made around $2,000 which was Feb. 20-29. I stepped my game up and changed the way I was doing some things, and I saw a dramatic increase in my earnings, went up to $500-800 a day. Kept at it and for the past two weeks I have made over $1,000 a day with the highest earnings being around $1,900." Check Orsini (2012)[d] for the complete interview.

Matt Collins, the editor of Total Pinterest (An international team of writers who love covering the latest goings-on in the world of Pinterest) has noticed three fashion items showing on Pinterest's 'popular' tab, and have received hundreds of likes, dozens of comments, and thousands of repins. When he traced the tree pins, he found that they have pinned by three different users who share the same account pattern, that is the account is fairly empty, no description, a few pins included, and is linked to an empty Twitter account. Moreover, they're all linked to an Amazon.com link using an affiliate code of "finalfantas07-20″. He also compares between some typical repin profiles for items picked at random from the 'popular' tab and the repin profile of the spam pins.
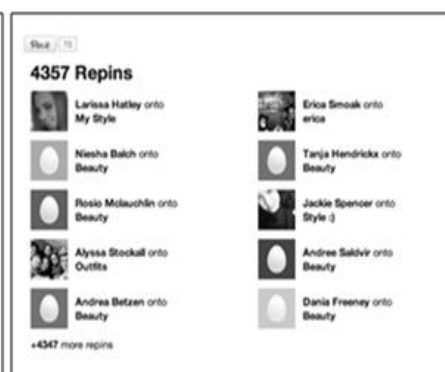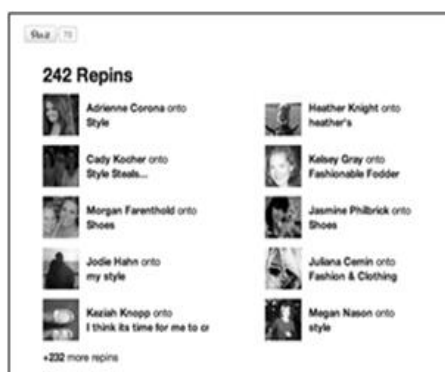

Figure 6: Repin Profile for a Regular Pin   Figure 7: Repin Profile for One of the Spam Pins

In Figure 6 all repinners have profile picture. On the other hand Figure 7, for the "suspicious" pin, most repinners have no profile picture.

DISCUSSIONS AND CONCLUSIONS

Like almost all social networks, Pinterest faces a spam problem which increases day by day as Pinterest gains such amazing popularity. This paper is considered to be the first paper in literature to spot the spam problem in Pinterest. We draw our remarks in the following points:

- As for today, spammers are taking a new league to promote their spam. As one of their tricks is discovered, they change their style and try to come up with new techniques, spammers now tend to replace the explicit expressions for attracting users such as "Free Gift", "Hurry up", "one time offer", …etc., with elegant well designed ads which are hard to recognize as spam.

- While Spammers still create spam profiles with missing profile pictures, yet they now manage to create a more human like profiles with real profile pictures and contents.

- In response to the raised voice demanding Pinterest to take some action regarding the spam problem and try to make Pinterest community much safer, Pinterest announced in October 17 2012, two new features for Pinterest users, "Block user" and "Report user". Reporting was previously available only on individual pins, which was an insufficient for users to tell Pinterest about accounts that might be violating the site guidelines.

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